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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,430	10/20/2003	Hong-Miao Chen	TS00-511	2807
8933	7590	11/04/2004	EXAMINER	
DUANE MORRIS, LLP IP DEPARTMENT ONE LIBERTY PLACE PHILADELPHIA, PA 19103-7396			ANYA, IGWE U	
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 11/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/689,430

Applicant(s)

CHEN ET AL.

Examiner

Igwe U. Anya

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-15 is/are allowed.
- 6) ☒ Claim(s) 1-6, 16, 22 and 23 is/are rejected.
- 7) ☒ Claim(s) 7, 8 and 17-22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1 – 3, 5, 16, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grier et al. (USPAB 2004/0036976) in view of Wang et al. (USPAB 2002/0108859).

4. Grier et al. teach a method of removing particle (14) from matter (paragraph 49), comprising, an optical assembly of laser light source and lens system with a focal point coincident on the particle (fig. 1, & paragraph 30), the laser light having sufficient power at the focal point to form an optical trap for the particle and removing the particle from said matter (paragraph 29). The particle having a diameter of less than 1 micron (paragraph 43).

5. Grier et al. lack a lens system of numerical aperture greater than 0.8 used for determining positional coordinate of the particle, and solid matter.

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6. However, Wang et al. teach a method of removing particle(s) from a substrate and disposing the particle at a different location (fig. 30), comprising, a lens system of numerical aperture greater than 0.8 for optical radiation and determining positional coordinate (paragraph 107).

7. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Grier et al. and Wang et al. to remove particles from a substrate.

8. Claims 4, 6, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grier et al. (USPAB 2004/0036976) in view of Wang et al. (USPAB 2002/0108859), and further in view of Burns et al. (US Patent 5245466).

9. The Grier/Wang et al. reference teaches the features previously outlined, but lack a laser power level of at least 10 Watts.

10. However, Burns et al. teach a laser power level of at least 10 Watts (col. 7 lines 9 – 27).

11. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Burns et al. into the Grier/Wang et al. reference and use any appropriate wattage. Discovering an optimum value for a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). The particles consisting of particles that have a non-zero probability of damaging the circuit has not been given any patentable weight. To be entitled to weight in method claims, the recited limitation must affect the method in a manipulative sense. Ex parte Pfeiffer, 1962 C.D. 408 (1961).

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12. Claims 7, 8, and 17 – 21 are objected to as being dependent upon a rejected claim, but would be allowable if rewritten in independent form.

13. Claims 9 – 15 are allowable, because prior art does not teach a stream of gas that flows past and around a wafer in a downward direction as a component of the removing force for the particle.

14. Prior art considered, but not used in the rejection include Hammond et al. (US Patent 5950071), Uziel et al. (US Patent 6566169), and Ryskoski (US Patent 6371135).

Remarks

15. Applicant's arguments filed August 6, 2004 have been fully considered but they are not persuasive.

(1) A beam cannot be focused on a target unless the positional coordinates of the target are predetermined (inherency).

(2) In paragraph 107 Wang et al. teach the objective lens “serves to both provide optical radiation and imaging of the system”, and a “control system 284 controls the translation” motion of the objective lens.

(3) In paragraph 30 Grier et al. teach angular displacement of the beam and varying convergence of the beam are two variables that “can be used to form the optical trap at selected positions within the imaging volume”. This action is non-final as a result of omission to include rejection of claim 6 in the previous office action.

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Contact Information

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Igwe U. Anya whose telephone number is (571) 272-1887. The examiner can normally be reached on M - F 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Igwe U. Anya
Examiner
Art Unit 2825

IA

October 30, 2004



MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
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